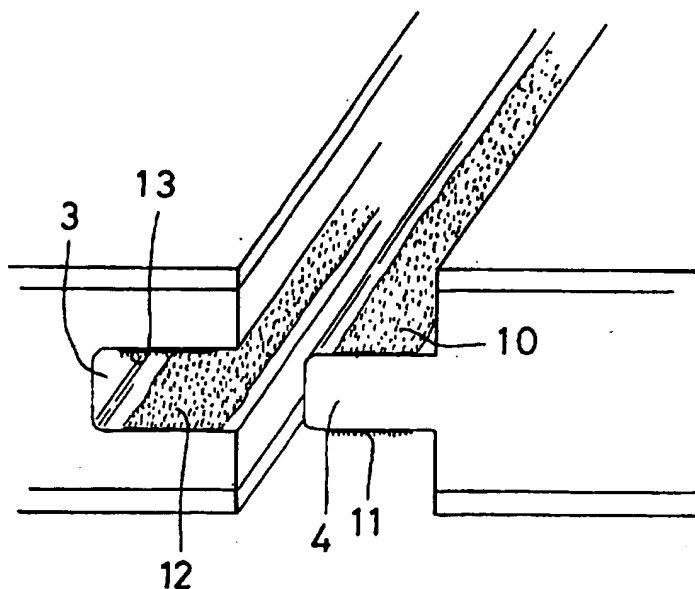


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(21) International Application Number: PCT/SE95/01537 (22) International Filing Date: 19 December 1995 (19.12.95) (30) Priority Data: 9500318-2 30 January 1995 (30.01.95) SE (71) Applicant (for all designated States except US): AB GOLV-ABIA [SE/SE]; P.O. Box 43, S-334 21 Anderstorp (SE). (72) Inventor; and (75) Inventor/Applicant (for US only): ANDERSSON, Kjell [SE/SE]; Violvägen 1, S-334 33 Anderstorp (SE). (74) Agent: WALLENGREN, Yngvar; Patentbyrå Y Wallengren AB, P.O. Box 116, S-331 21 Värnamo (SE).		(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: JOINTING SYSTEM**(57) Abstract**

In a system for joining together of adjacent pieces of flooring material by means of grooves (3) and tongues (4), at least one of the opposing surfaces on the tongues (4) and the grooves (3) of the pieces display flocked surface portions (10-13). The flocked surface portions (10-13) extend along the tongues (4) and/or the grooves (3) and cover substantially their entire length. The fibre length (9) of the flocked surface portions (10-13) exceeds the difference between the width of the grooves (3) and the thickness of the tongues (4).

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JOINTING SYSTEM

TECHNICAL FIELD

- 5 The present invention relates to a system for tongue and groove jointing of adjacent pieces of flooring material.

The present invention also relates to a flooring material which is composed of a number of smaller pieces provided with tongues and grooves.

10

BACKGROUND ART

- 15 Flooring materials of the parquet floor type are previously known in the art as displaying surface coatings of, for example, veneer, laminate or the like on the upper and lower sides. The flooring material is in the form of tiles or elongate, relatively narrow strips which, in the central region seen in the cross sectional direction, have a panel or core forming layer often of wood or wood-based materials such as core-board, hardboard, chipboard, MDF board (medium density fibre board) or the like.

20

- Along their edges, the pieces of such flooring material are provided with tongues and grooves (T&G) which are joined together when a floor is laid. In order to positionally fix the different pieces of the flooring material, glue is employed to a large extent, so that a large continuous sheet is formed of the flooring material which thereby covers a complete floor in one continuous unbroken piece or stratum.
- 25

- The use of glue for jointing together smaller pieces of flooring material is time-consuming and involves risks that the surface coating layers, principally on the upper side of the material, be dirtied so that they become unusable or at least require cleaning.
- 30

PROBLEM STRUCTURE

- 35 The present invention has for its object to devise the system intimated by way of introduction such that it obviates the drawbacks inherent in older,

prior art designs and constructions. In particular, the present invention has for its object to realise a system which eliminates the need for glue in jointing together of T&G on adjacent pieces of flooring material. Thus, the present invention relates to a system which permits adjacent pieces of flooring material quite simply to be slid together in order thereafter to be separable from one another only with great difficulty or using force. Finally, the present invention has for its object to realise a system which is simple and economical to produce.

10 SOLUTION

The objects forming the basis of the present invention will be attained if the system intimated by way of introduction is characterized in that at least one of the opposing surfaces on the tongues and grooves of the flooring pieces are provided with flocked surface portions.

The flocked surface portions display such length of individual fibres that these are bent on jointing together of two adjacent pieces of flooring material. The thus bent or curved fibres will hereby act as a very large number of barbs which must be bent or deformed in connection with the separation of the flooring material pieces from one another. Taken as a whole, these fibres generate extremely great cohesive forces.

Further advantages will be attained if the present invention is also given one or more of the characterizing features as set forth in appended Claims 2 to 10.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

The present invention will now be described in greater detail hereinbelow, with particular reference to the accompanying Drawings. In the accompanying Drawings:

Fig. 1 is a perspective partial view of a first embodiment of the present invention;

- Fig. 2 is a view corresponding to that of Fig. 1 of a second embodiment of the present invention;
- 5 Fig. 3 is a view corresponding to that of Fig. 1 of a third embodiment of the present invention;
- Fig. 4 is a view corresponding to that of Fig. 1 of a fourth embodiment of the present invention;
- 10 Fig. 5 is a view corresponding to that of Fig. 1 of a fifth embodiment of the present invention; and
- Fig. 6 is a partial view, on a larger scale, of a jointing region between a groove and a tongue accommodated therein.

15

DESCRIPTION OF PREFERRED EMBODIMENTS

In Fig. 1, reference numerals 1 and 2 relate to two pieces of a flooring material in which a first piece 1 is provided with a groove 3 for jointing together with a corresponding tongue 4 on the other flooring piece 2. The different pieces of flooring material which, in daily parlance, are often called "laminated parquet", have upper surface coating layers 5 which, on the one hand, are intended to be of decorative appearance in order, for example, to imitate a "genuine" parquet floor and, on the other hand, possess good resistance to wear etc. Seen in the cross sectional direction centrally in the pieces 1 and 2, these have cores 6 or panel forming portions which preferably consist of wood or wood-based material. For example, the cores may consist of core-board, plywood, hardboard, chipboard, MDF board (medium density fibre board) or similar material. Finally, the pieces 1 and 2 have, on their underside, a lower surface coating 7 whose function is to act as a barrier layer preventing the flooring material from warping as a result of damp, temperature differences or other factors. Thus, the purpose of the barrier layer 7 is to keep the pieces of flooring material in a planar state. As far as the flooring material and the pieces thereof are described above, they are to be considered as conventional.

- In its most general form, the present invention implies that at least one of the counter-facing surfaces on the tongues 4 and grooves 3 of the pieces 1 and 2 are provided with a large number of barb devices. These barb devices are designed in such a manner that, on jointing together of tongue and groove, they are folded or bent obliquely backwards in the direction of insertion of the tongue 4 into the groove 3 in order to engage with an opposing surface on the other material piece (Fig. 6). In order to be able to separate the material pieces 1 and 2 from one another, i.e. by withdrawing the tongue 4 from the groove 3, it is necessary that these barb devices be considerably deformed, substantially in their own longitudinal direction, or that they be forced into the opposing surface on the other material piece. If the barb devices are present in large numbers, extremely great forces may occur which prevent withdrawal of the tongue 4.
- 15 In one practical embodiment, the barb devices are formed from so-called flocks which are applied according to the foregoing and which extend in the longitudinal direction of the tongues and/or the grooves and cover substantially the whole of their length.
- 20 A flock consists of a base 8 (Fig. 6) in the form of a layer or foil of suitable adhesive or binder in which the one end of a very large number of approximately equal-length fibres 9 (Fig. 6) are secured. The individual fibres are straight and at least transversely directed, but preferably approximately at right angles to the plane of the base and the subjacent surface.
- 25 The application of the base 8 may be effected by spraying, brushing or the like of a binder of suitable viscosity. Thereafter, the electrostatically charged short fibre pieces are blown or sprayed against the binder layer so that the ends of the individual fibres adhere in the base. As a result of the electrostatic charging with the same polarity on all fibres, the fibres will repel one another and assume a position such that they will be approximately at right angles to the substrate.
- 30 It will further be apparent from Fig. 6 that the fibre length, or at least the average fibre length, exceeds the difference between the width of the grooves
- 35

and the thickness of the tongues. This ensures the above-mentioned bending and oblique positioning of the fibres 9 on insertion of the tongue 4 in the groove 3.

- 5 In order to improve the capability of the barb devices or individual fibres 9 to engage with the opposing surface, this is provided with a roughened, raised or uneven surface structure. If the core 6 in the pieces 1 and 2 consists of wood or wood-based material, a suitable surface structure may be achieved by direct machine processing of this material. A suitable surface structure
10 will thus be created by sawing, milling or grinding direct in the material of the core 6.

- In the embodiment according to Fig. 1, there is provided an elongate, strip shaped flock 10 on the upper side of the tongue 4. The flock 10 extends
15 suitably along the tongue 4 preferably throughout its entire length. Furthermore, it is appropriate that the flock 10 covers as great a portion of the width of the tongue as possible.

- The application of the flock 10 to the tongue 4 is particularly simple, since
20 the upper and lower surfaces of the tongue 4 are freely accessible for the electrostatic application of the fibres 9.

- Fig. 2 shows a relatively similar embodiment in which, however, the tongue 4 is provided with flocks 10 and 11 on its upper and lower sides,
25 respectively.

- In the embodiment according to Fig. 2, the tongue 4 may suitably be of slightly lesser thickness in relation to the width of the groove 3 than was the case in the embodiment according to Fig. 1.

- 30 In Fig. 3, use is made of a flock 10 on the upper side of the tongue 4 and a flock 12 on the lower defining surface of the groove 3. In this embodiment, the fit between the tongue and the groove should correspond to that which applied in the embodiment according to Fig. 2.

Fig. 4 shows an embodiment in which the tongue 4 is provided with a flock 10 and in which, in addition, the groove 3 is provided with flocks 12 and 13 on its underside and upper side, respectively. The fit between the tongue and groove may possibly be slightly looser than was the case in the embodiment according to Fig. 3.

Fig. 5 shows an embodiment in which the upper and lower sides of the tongue 4 are provided with flocks 10 and 11. Correspondingly, the groove 3 also has flocks 12 and 13 on the under and upper sides, respectively.

As an alternative to applying the base 8 direct to the defining surfaces of the tongue 4 or the groove 3, it may be appropriate to apply the base to a self-adhesive foil or carrier which is provided with the flock fibre. The self-adhesive carrier may then be clipped or cut to suitable strips which are applied to the intended surfaces on the tongue or groove. This embodiment would appear to be particularly advantageous in the application of the flocks 12 and 13 interiorly in the groove 3.

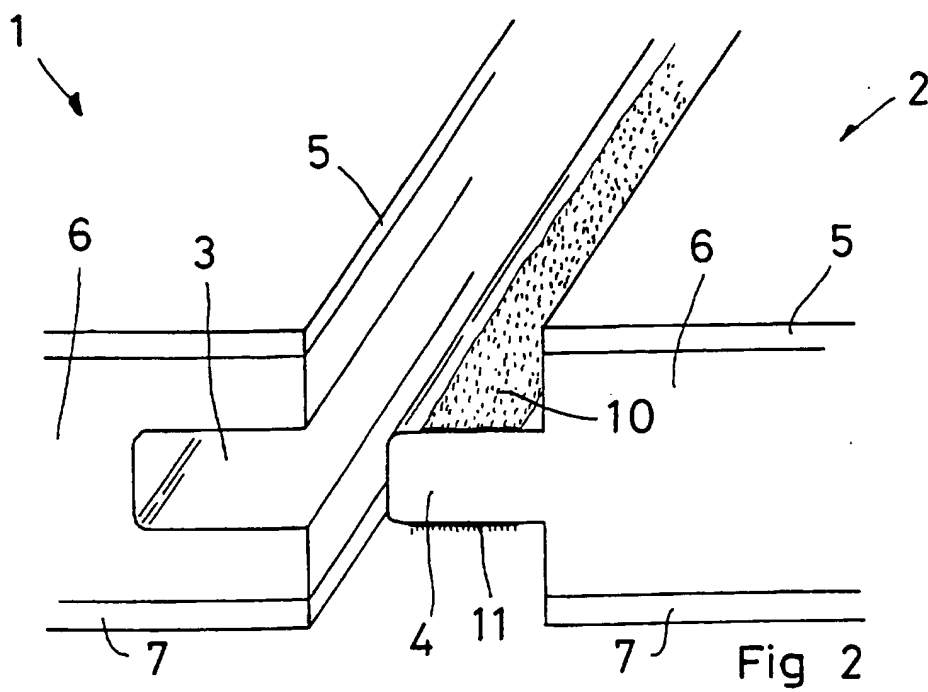
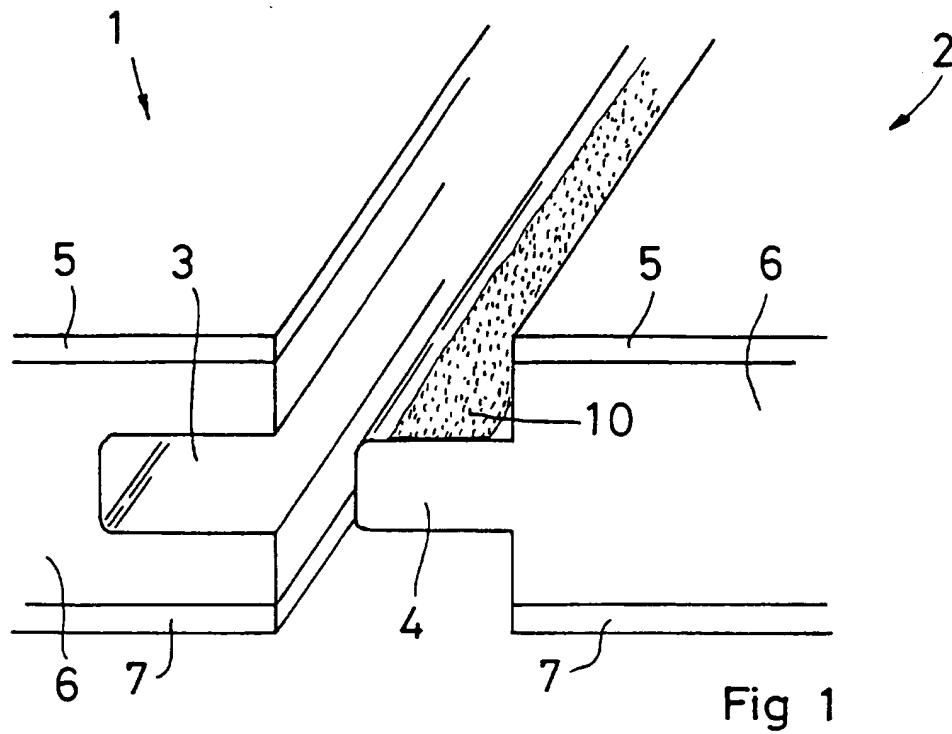
The present invention may be further modified without departing from the spirit and scope of the appended Claims.

WHAT IS CLAIMED IS:

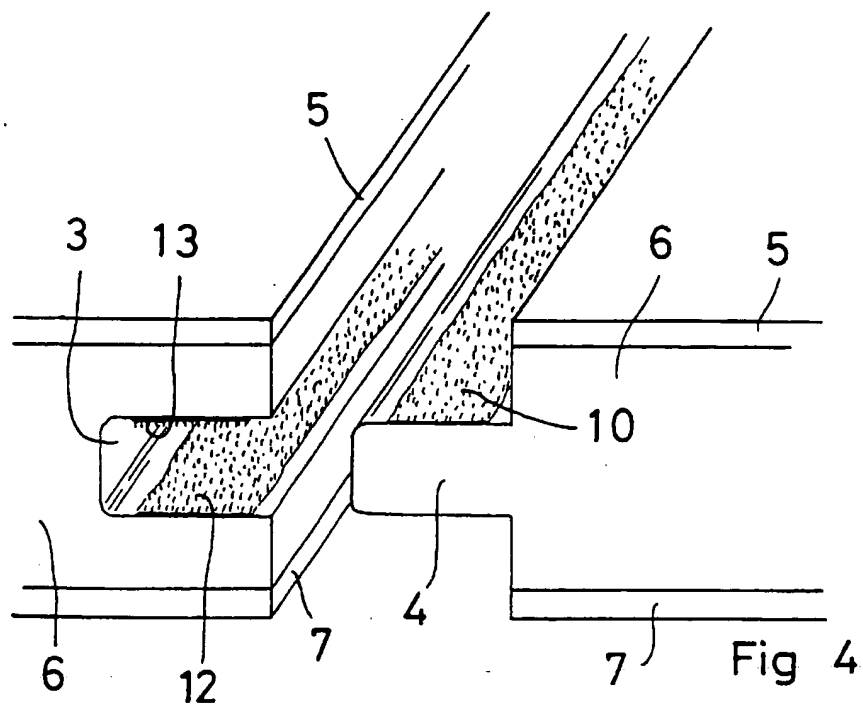
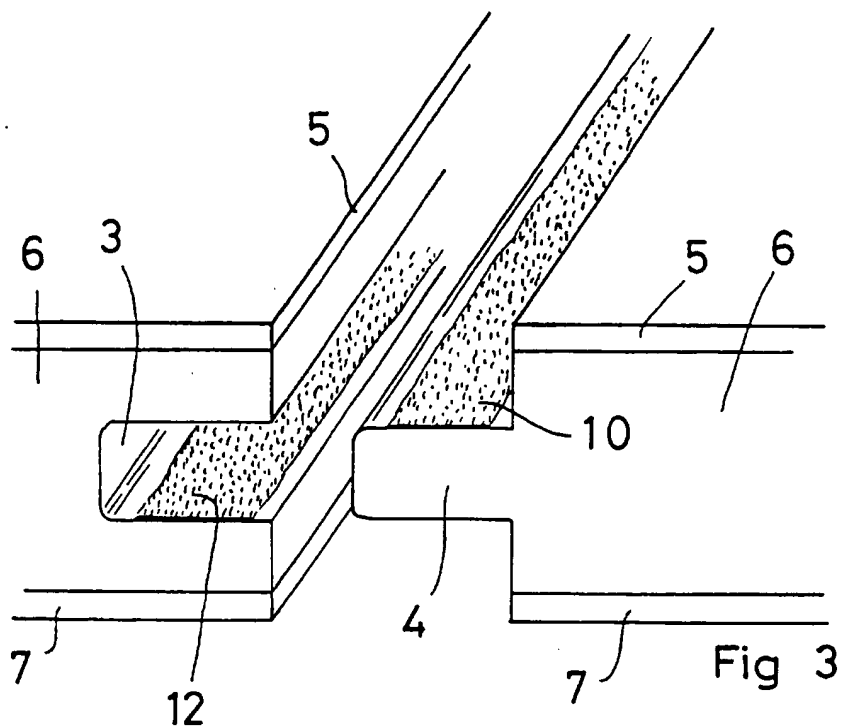
1. A system for tongue (4) and groove (3) jointing of adjacent pieces (1, 2) of flooring material, characterized in that at least one of the opposing
5 surfaces on the tongues (4) and the grooves (3) of the pieces (1, 2) are provided with flocked surface portions (10-13).
2. The system as claimed in Claim 1, characterized in that the flocked
10 surface portions (10, 11) are disposed on at least one of the upper and lower sides of the tongues (4).
3. The system as claimed in Claim 1 or 2, characterized in that the
15 flocked surface portions (10, 11) are disposed on both the upper and lower sides of the tongues (4).
4. The system as claimed in any of Claims 1 to 3, characterized in that
the flocked surface portions (12, 13) are disposed on at least one of the upper
and lower sides of the grooves (3).
- 20 5. The system as claimed in any of Claims 1 to 4, characterized in that
the flocked surface portions (12, 13) are disposed both the upper and lower
sides of the grooves (3).
- 25 6. The system as claimed in any of Claims 1 to 5, characterized in that
the flocked surface portions (10-13) extend along the tongues (4) and/or the
grooves (3) and cover substantially the entirety of their length.
- 30 7. The system as claimed in any of Claims 1 to 6, characterized in that
the flocked surface portions (10-13) have a fibre length (9) which exceeds the
difference between the width of the grooves (3) and the thickness of the
tongues (4).
- 35 8. The system as claimed in any of Claims 1 to 7, characterized in that
unflocked surface portions in the grooves (3) and tongues (4), respectively,
display a roughened, raised or uneven surface structure.

9. The system as claimed in Claim 8, characterized in that the surface structure is formed by machine processing, principally by milling, sawing or grinding of wood or a wood-based material.

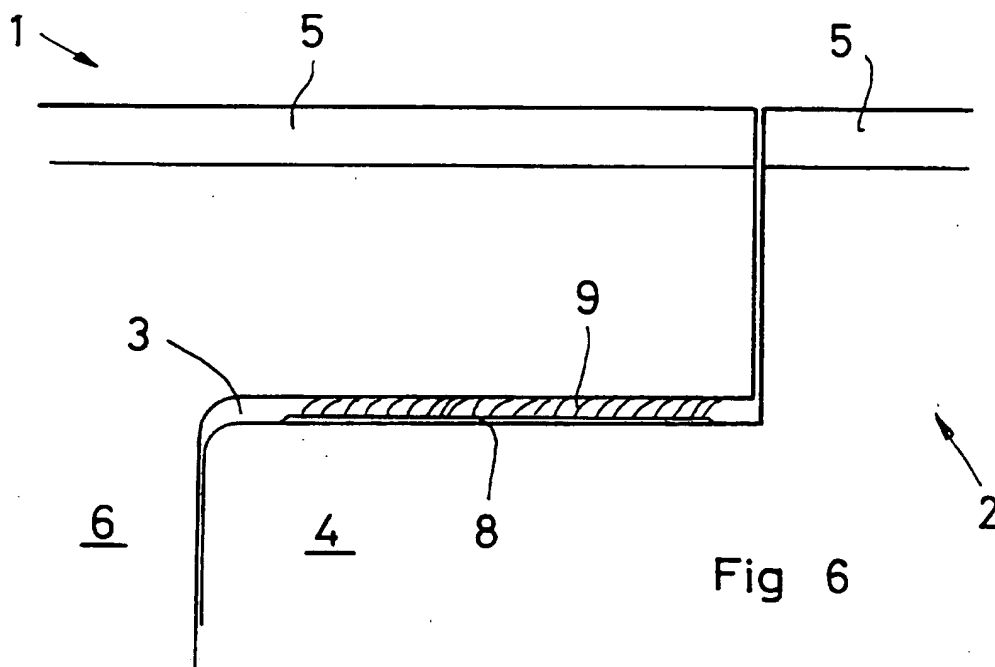
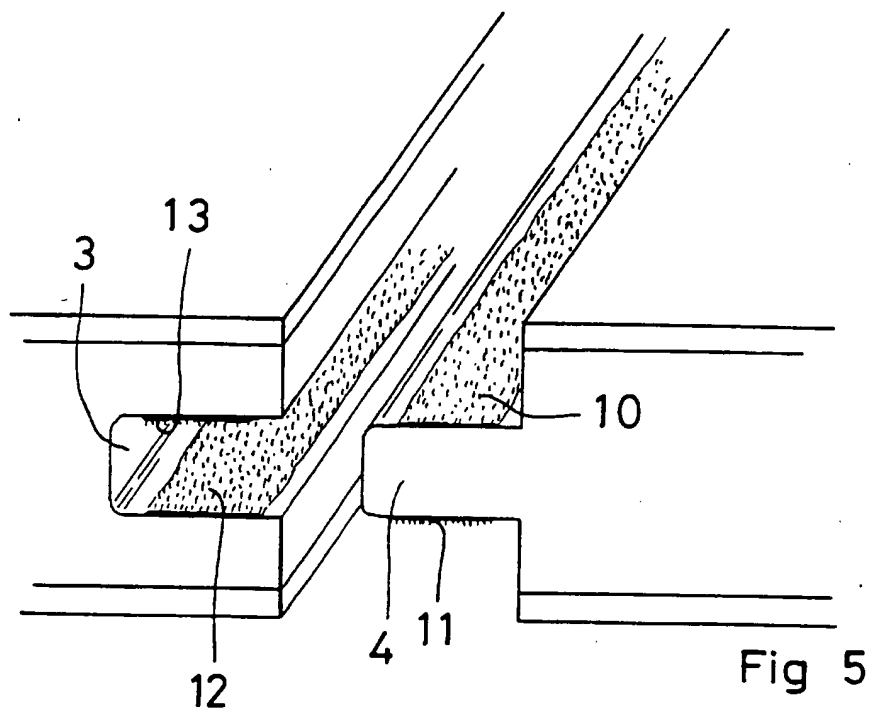
- 5 10. A flooring material composed of a number of smaller pieces (1, 2) which have grooves (3) and tongues (4), characterized in that at least one surface on a groove (3) or a tongue (4) on two united pieces (1, 2) has a flock (10-13) for holding together the groove (3) and the tongue (4).



2 / 3



3 / 3



INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 95/01537

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E04F 15/02, E04F 15/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: E04F, A47G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, CLAIMS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0161637 A2 (SAAMI CO., LTD), 21 November 1985 (21.11.85), figure 8, detail 10 --	1-10
A	DE 2427712 A1 (WOOG, GUNTER), 18 December 1975 (18.12.75), page 10, line 1 - line 6, details 2,10 --	1-10
E	WO 9508033 A1 (JURISTBYRÅN INDIREKT AB), 23 March 1995 (23.03.95), abstract -- -----	1-10

☐ Further documents are listed in the continuation of Box C.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A2- 0161637	21/11/85	AU-B,B- 586819 AU-A- 4227785 JP-A- 60213151 US-A- 4649069 US-A- 4766022 JP-A- 60214720	27/07/89 14/11/85 25/10/85 10/03/87 23/08/88 28/10/85
DE-A1- 2427712	18/12/75	NONE	
WO-A1- 9508033	23/03/95	NONE	